

QNAP

vmware[®] with QNAP NAS/ QTS/QES

High availability, flash, and
virtualization solutions explained



QNAP

VMware Application

1

Virtual Server

Stable &
Comprehensive

2

Backup & Disaster Recovery

File & Service Backup

3

Modern Application

Performance & Space

QTS (Basic Plan) / QES (Advanced Plan)

High-availability, Pool over-provisioning, Assistance
kit, SnapSync, SRM, Qtier,
Data saving, iSER (RDMA)



The trend of virtualization storage

Enterprise storage – The fundamentals of digital transformation



You might encounter ...



- Needs for new app
- A lots of VMs grow
- Data increases rapidly
- I/O bottleneck

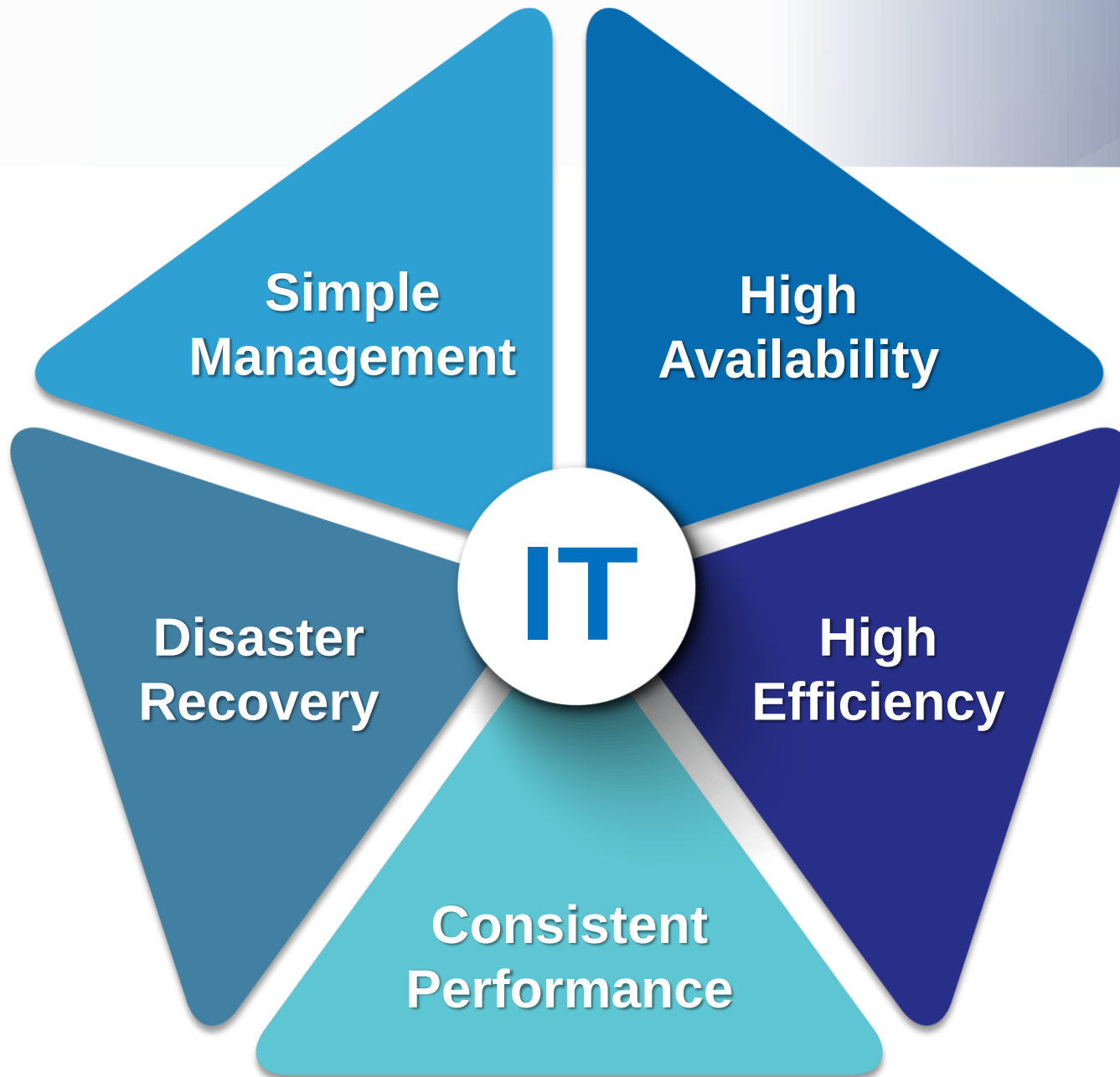


- Non-flexible configuration
- Complicated operation



- Non-available design
- Failure to recover service

The megatrend of enterprise storage is moving toward **high availability, flash** and **integration with virtualization**.



**Apart from data protection,
IT professionals also care ...**

**Maintain business continuity through
the five cores of this infrastructure.**

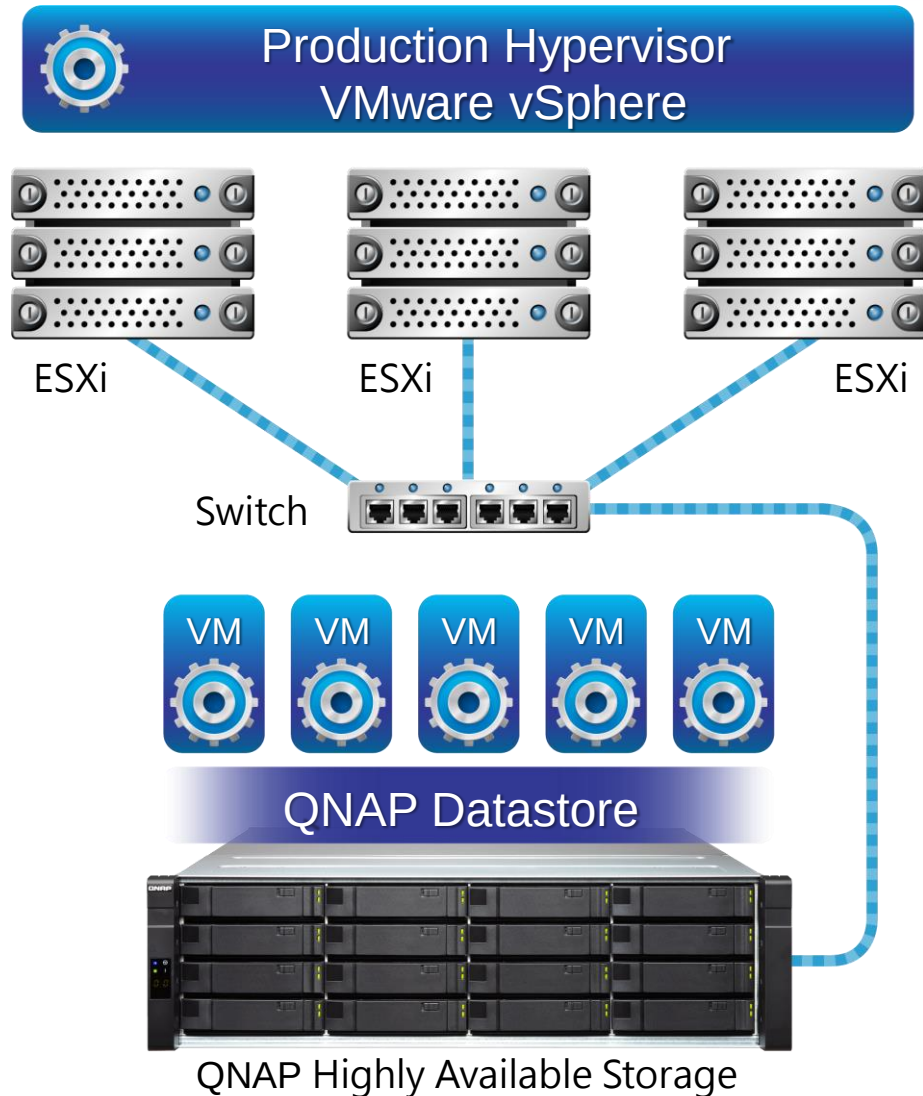
VMware Virtual Server

- VM Storage
- Snapshot
- Offload
- Service Non-interrupt
- Management



Case study – virtual server

The basic architecture of virtual servers with QNAP storage



01

Up to 50TB VMware datastore for web-server / exchange

02

24x7 continuous and stable services

03

Snapshot backup scheme

04

vSphere centralized management

05

Storage device offload

Highly available design for non-disruptive services

QNAP ES1640dc - for critical applications on VMware



**Active-Active HA
Dual controller**



01

BBU & NVRAM cache protection

02

Dual-path mini-SAS link

03

Built-in 10GbE interface

04

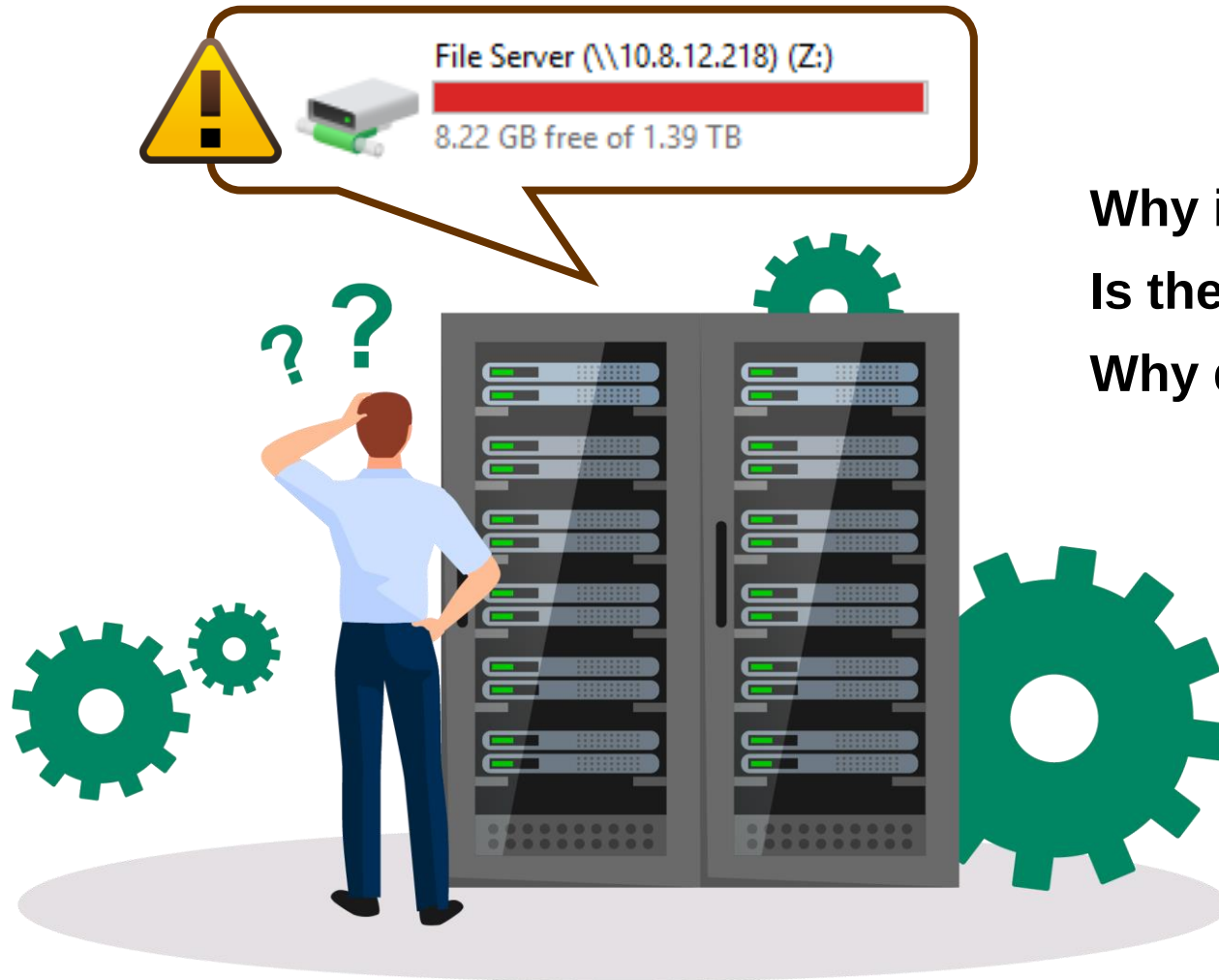
Port trunking / Multipath

05

ZFS end-to-end integrity

The glimpse of the performance of storage

Why is my storage device slowing down?



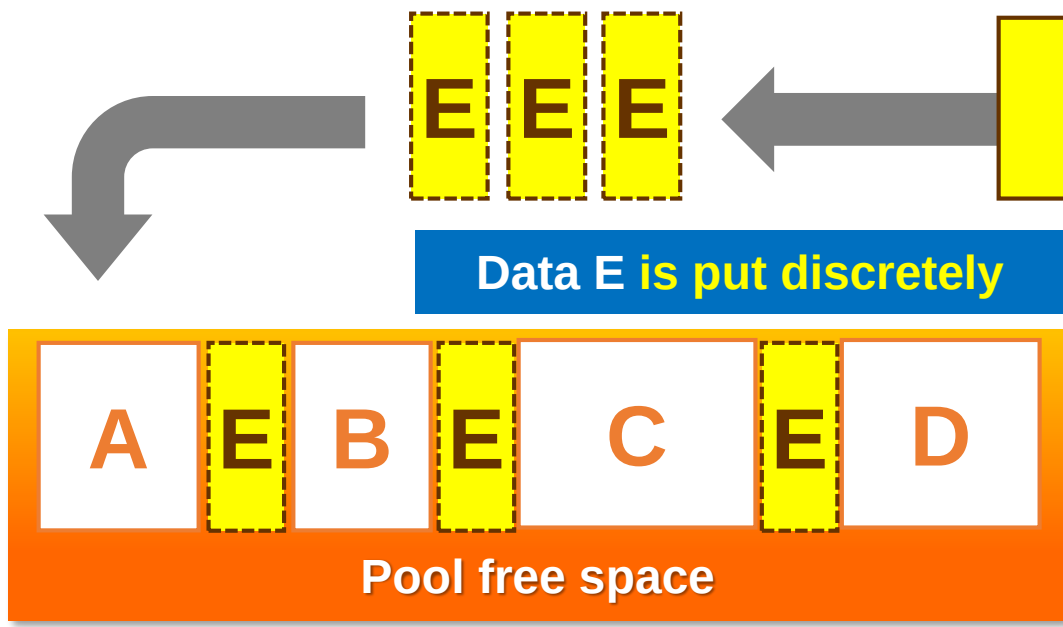
Why is the system getting slower and slower?
Is the service starting to slow down?
Why did the NAS slow down after a while?

Provide a more stable performance

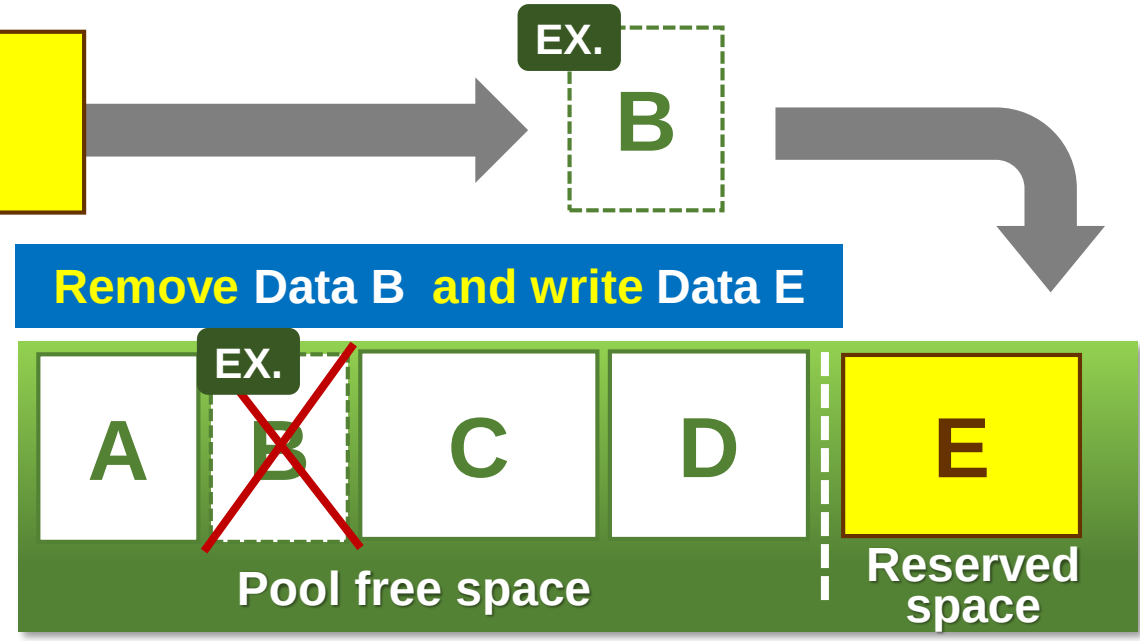
QES pool over provisioning decelerates the space fragmentation



In general : Not enough space to put **Data E**



Over provisioning : No space for **Data E**



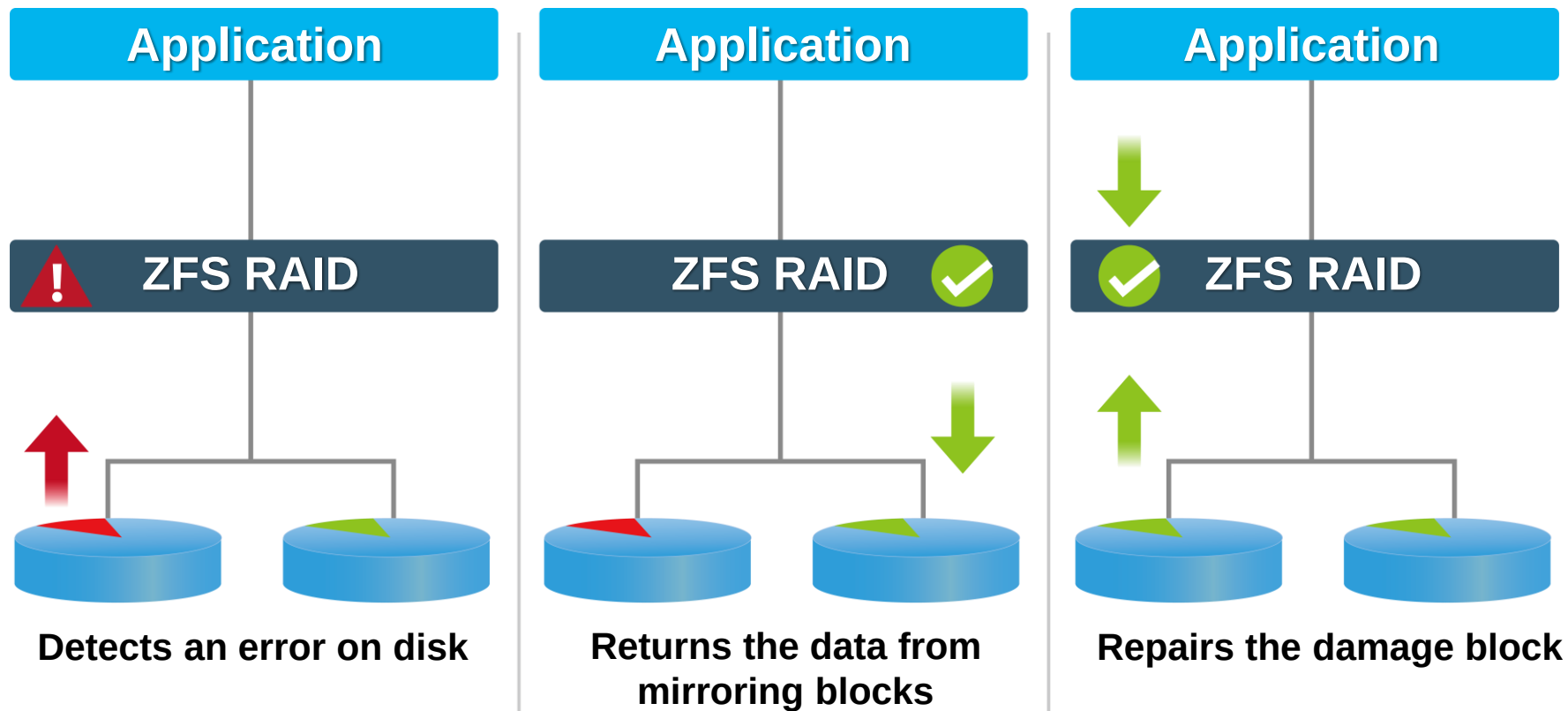
QES no-worry data protection



Data integrity

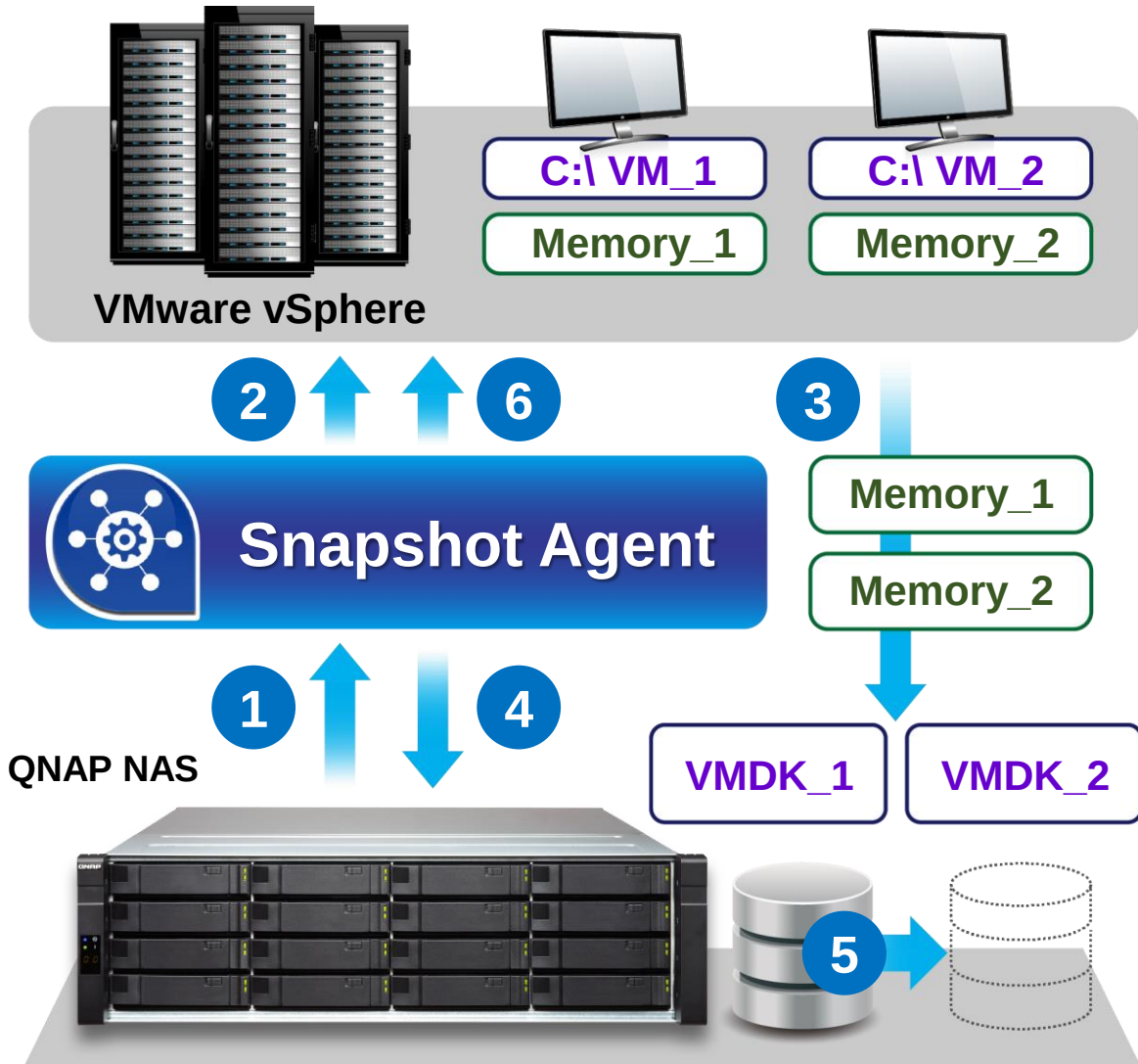
Checksum ensures data correctness by
detecting error & repairing damage

Silent data
corruption is not
an issue anymore



Backup tool – Snapshot Agent

Provide VMware point-in-time backup to ensure the consistency



01

NAS initiates the request and notifies Snapshot Agent to create the snapshot

02

Snapshot Agent notifies VMware server to stop any I/O transaction

03

Flush application data from cache to NAS

04

Snapshot Agent asks NAS to create the snapshot

05

NAS snapshot is created

06

Applications are free to resume writing data

Storage management

QNAP vSphere Web Plug-in helps you to manage storage devices



QNAP
vSphere Web Plug-in
manage and operate
together all in one place



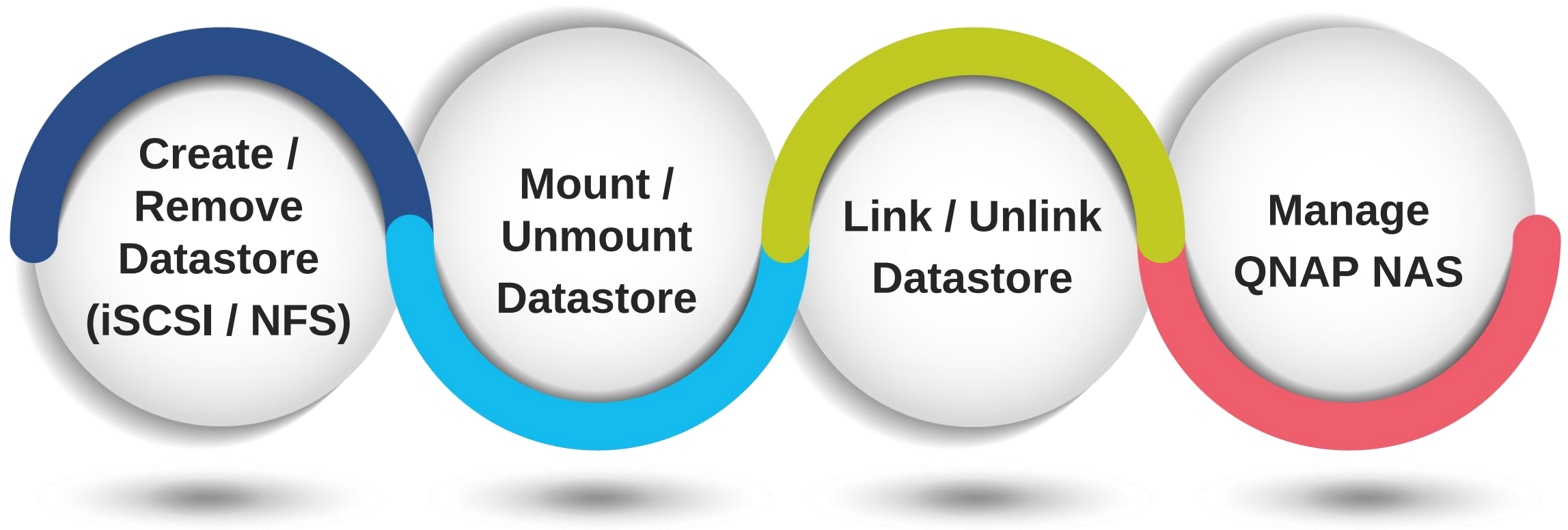
VMware
ESXi host



QNAP Storage

QNAP vSphere Web Plug-in

Single interface for server and storage management



QNAP

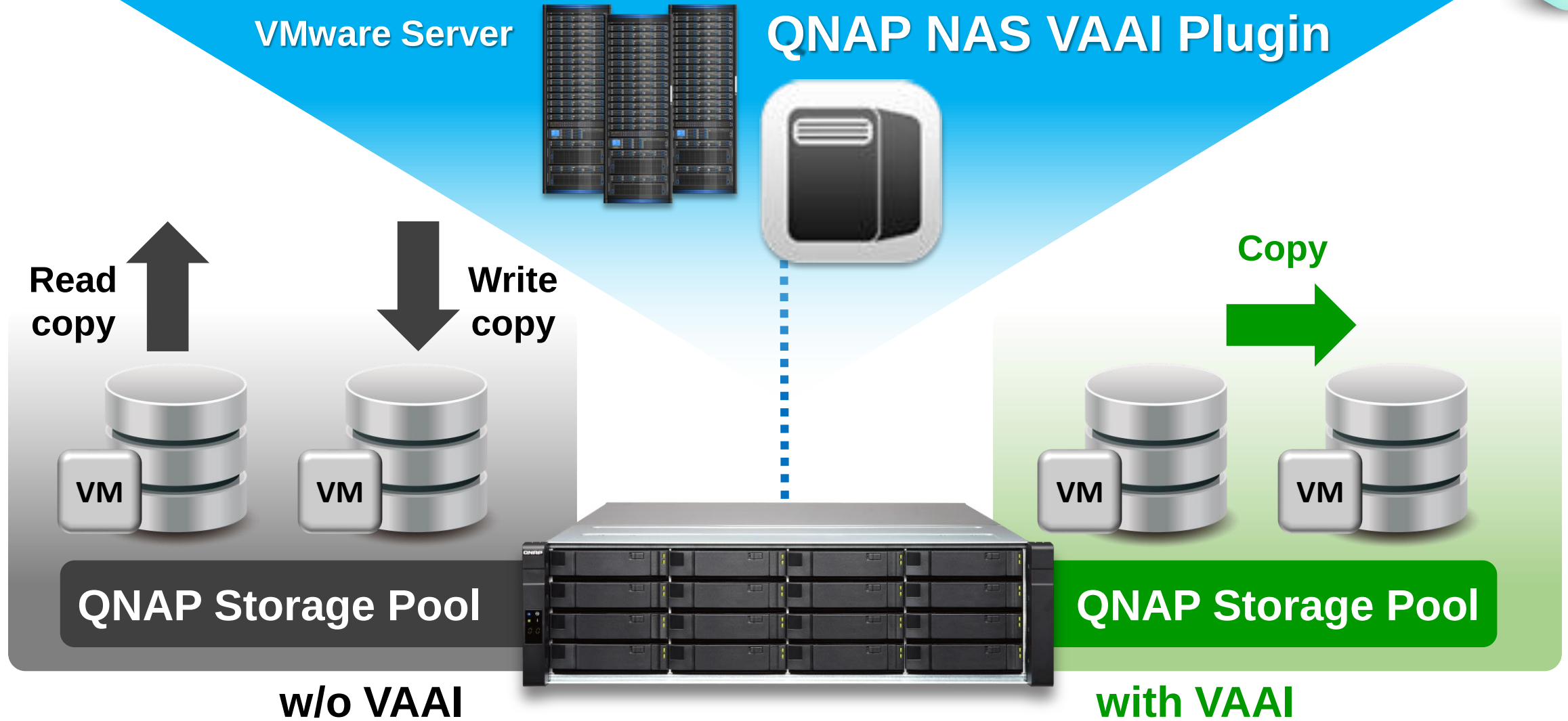
Demo

**vSphere Web Plug-in
(Conveniently Manage
QNAP Storage device)**



Do your storage devices integrate with virtualization?

vStorage APIs for Array Integration – VAAI fast clone VM

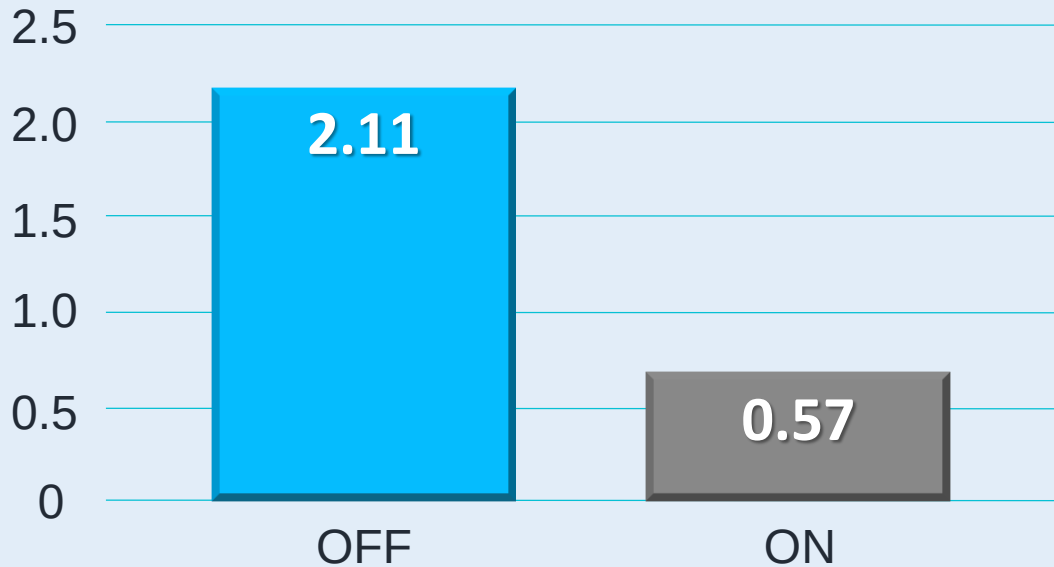


VAAI is a good partner (QTS/QES)

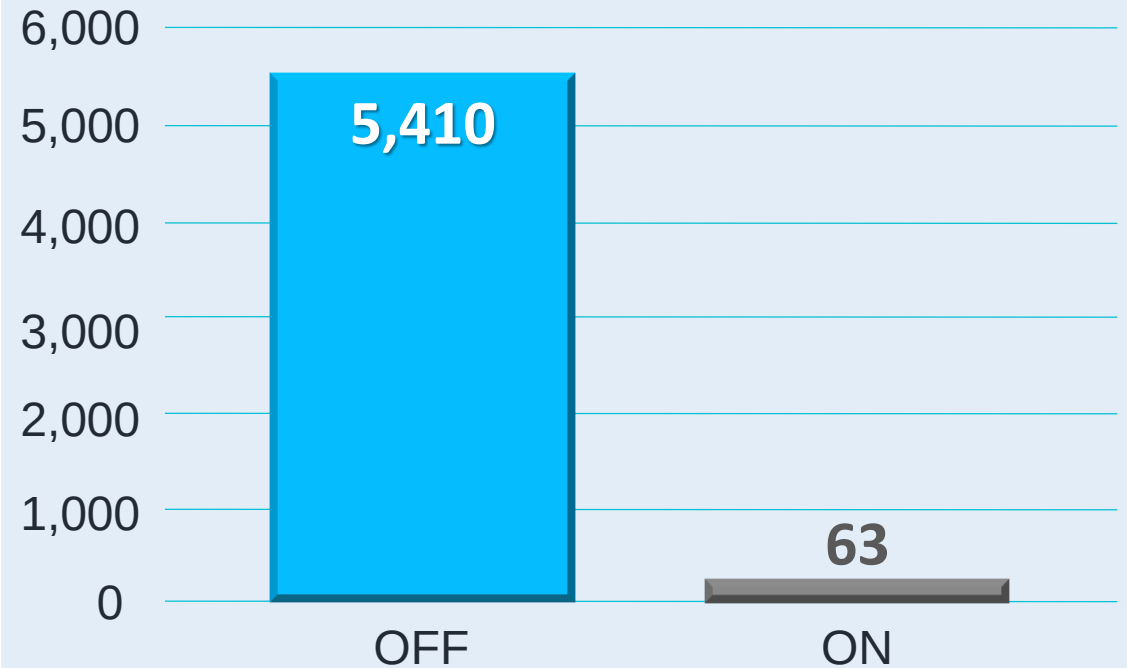


ESXi completely clone VMs of 40GB

Save **73%** computing



CPU (%)



Total IOPS

An arsenal of VMware integration tools



vSphere (Web) Client Plug-in

Admin can directly manage datastores on QNAP NAS by vSphere (Web) Client.



QNAP Snapshot Agent

Admin can create consistent snapshots of iSCSI LUN on QNAP NAS.



QNAP VMware vStorage API for Array Integration (VAAI)

Admin can optimize the performance when deploying virtualization.



VMware And QNAP ES series

Comprehensive fault tolerance

A 3D pyramid diagram is positioned on the left side of the slide. It is divided into three horizontal layers, each corresponding to a level of fault tolerance. The top layer is dark blue, the middle layer is teal, and the bottom layer is green. The pyramid is illuminated from the bottom left, creating a bright highlight on the green base.

Application

VMware vSphere Fault Tolerance ensures continuous availability for applications in the event of server failures.

Server

VMware vSphere High Availability (HA) protects your virtualized environment from failures at the server and OS level.

Storage

QNAP ES1640dc ensures data availability of VMware application at the storage level.



Backup Solution

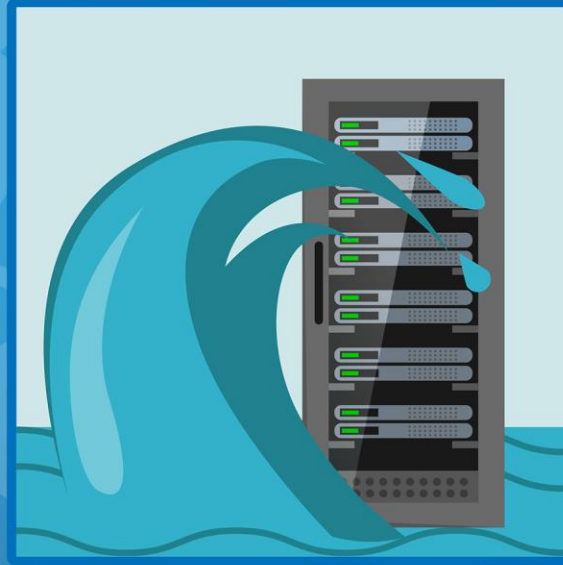
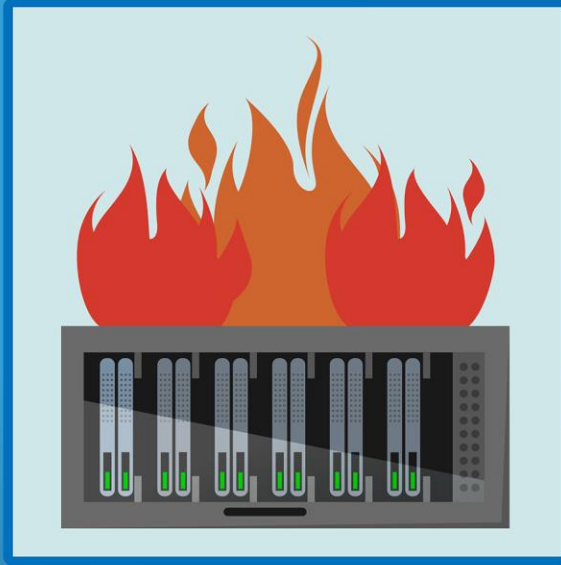
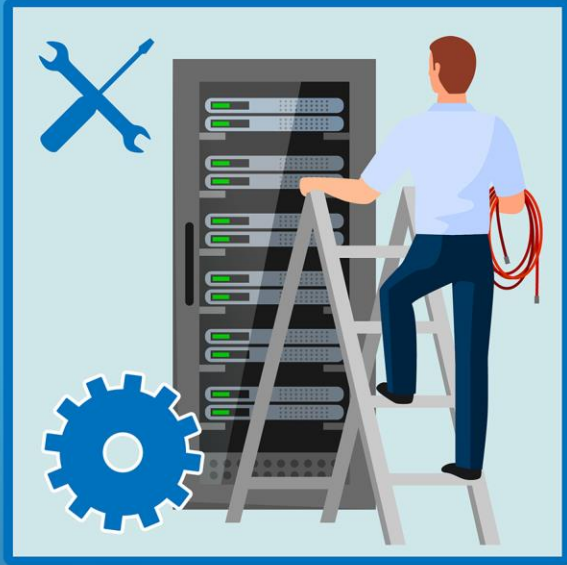
Basic

Data Replication

Advanced

Service Replication





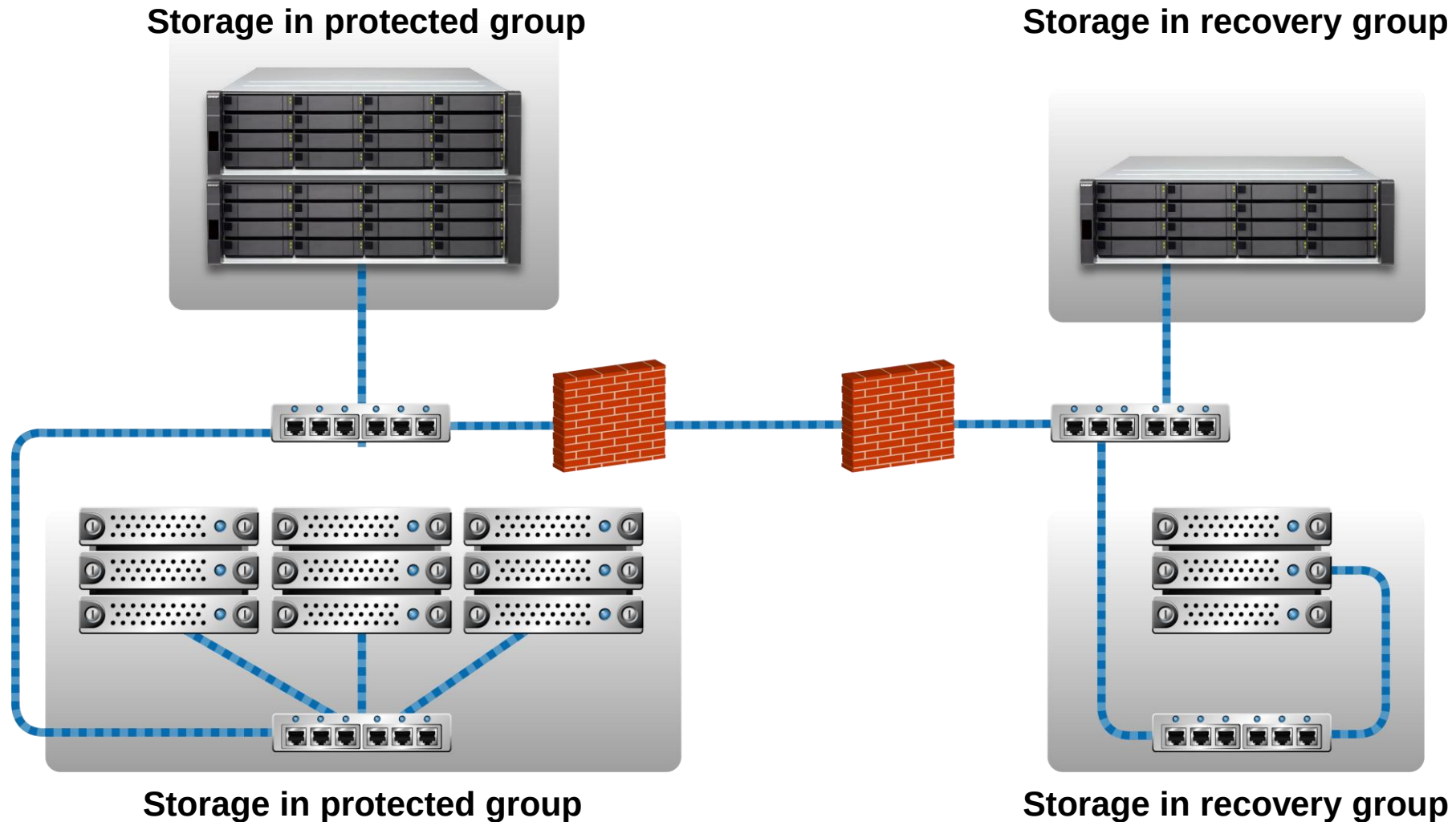
Computer system failure / fire / flooding ...



Tragedies happen!

15:00

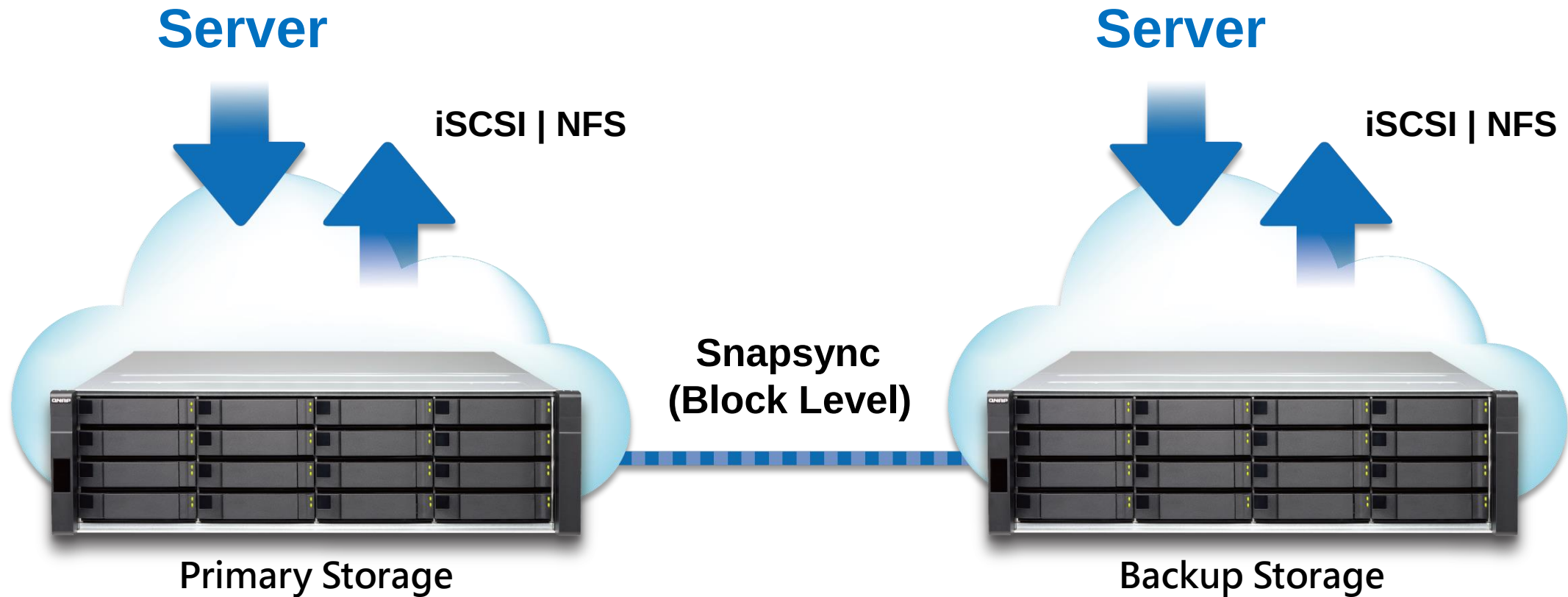
Case Study – Disaster Recovery



SnapSync Breakthrough data replication

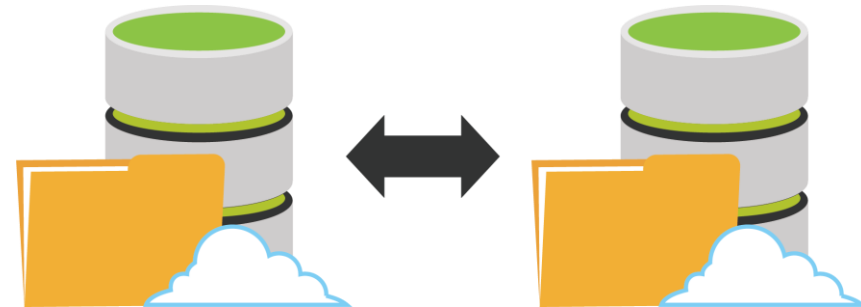
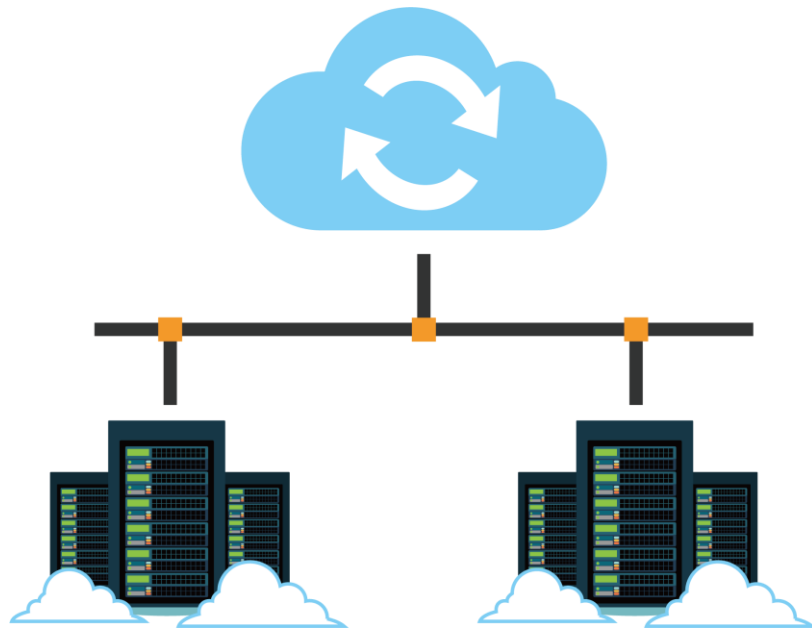


Easy and fast data replication



VMware Site Recovery Manager (SRM)

QNAP VMWare Storage Replication Adapter



QNAP VMWare Storage Replication Adapter (SRA)

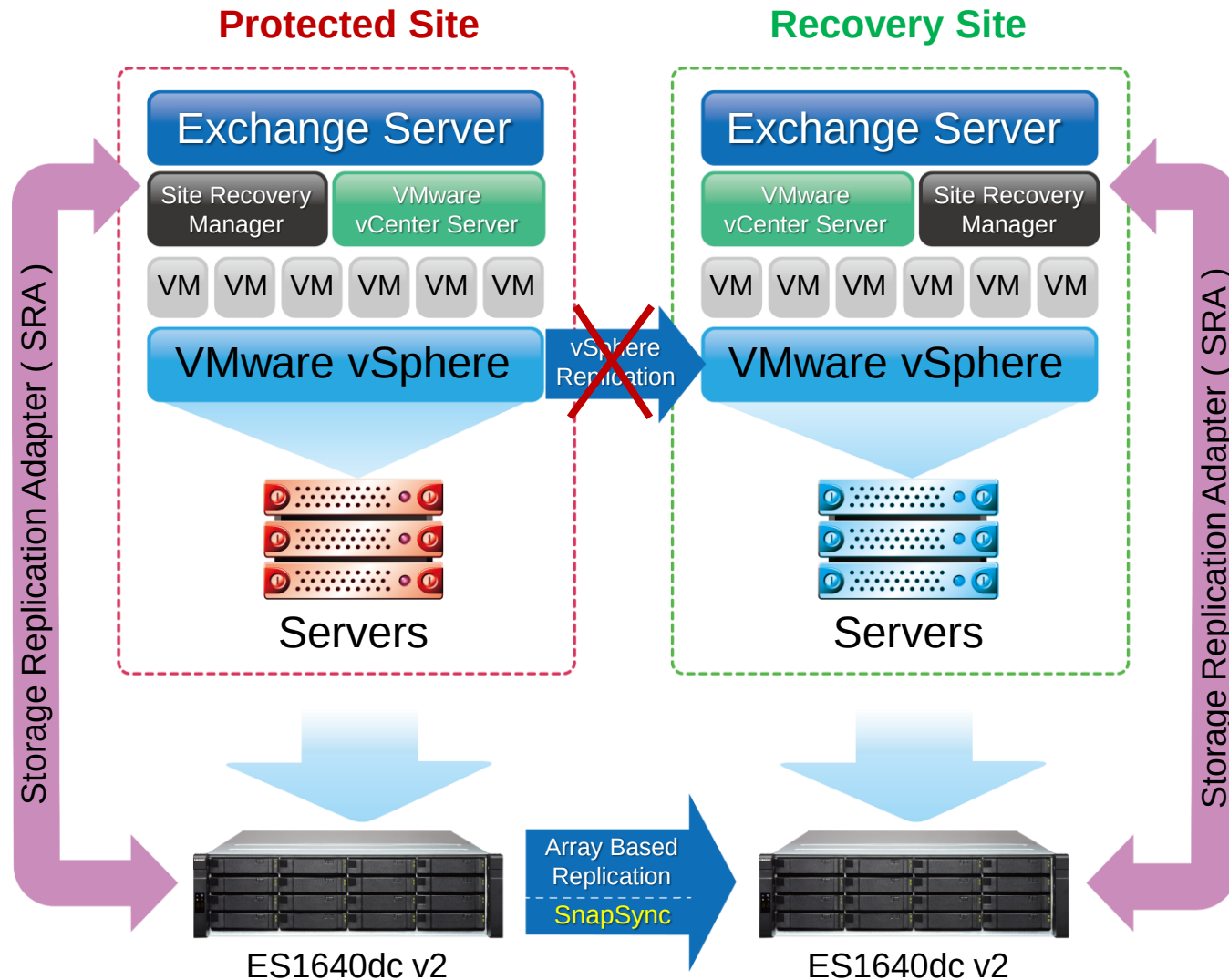
Integrating with VMware SRM to protect mission critical service

QNAP QES SnapSync

QES block level LUN / shared folder remote replication

Comprehensive VMware DR solution

Enable your service in recovery site just in time



QNAP Storage Replication Adapter (SRA) integrate with VMware Site Recovery Manager (SRM) to enable Array Based Replication through QES SnapSync.

Certified

QNAP SRA certify to VMware SRM 6.5



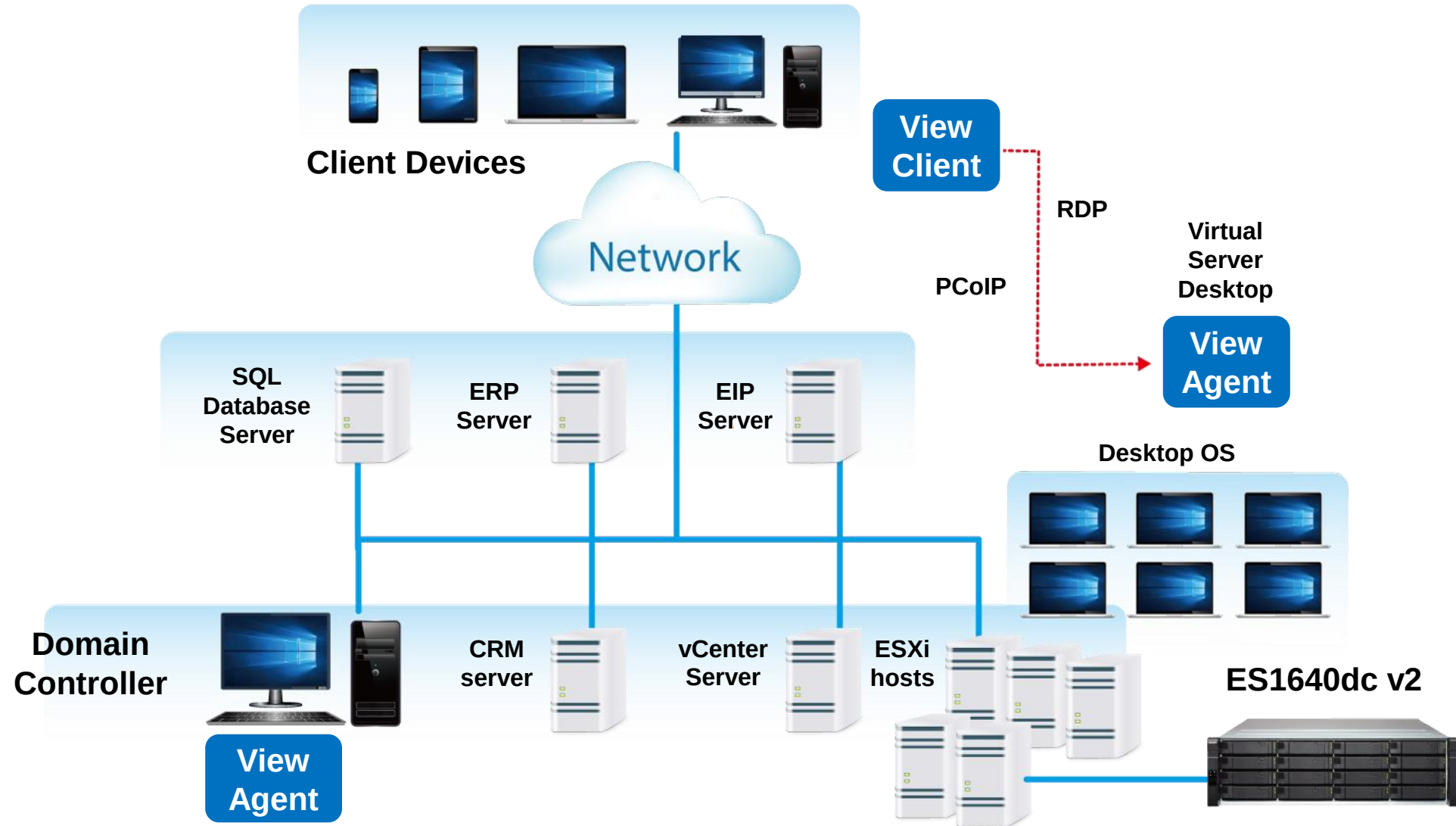
Modern Application

- VDI application
- Performance & Capacity
- SSD utilization
- iSER network boosting



Case Study – Modern Application

Storage virtualization, performance and capacity efficiency



About Performance...



Virtualization is all about
User experience.

IOPS requirement for VDI

Must provide similar (or better) user experience than a traditional desktop.

A normal desktop/laptop or physical server can provide an average of **150 IOPS**.



Without Compromise Virtualized Storage



Performance



- **IOPS** Application Requirement
- **Latency** User Experience

Capacity efficiency

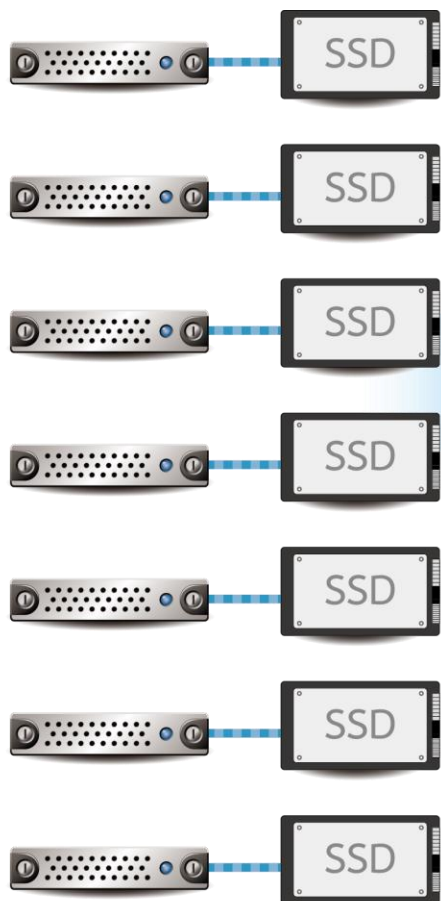


- **Compression** shrinking your space
- **Deduplication** keep purely data

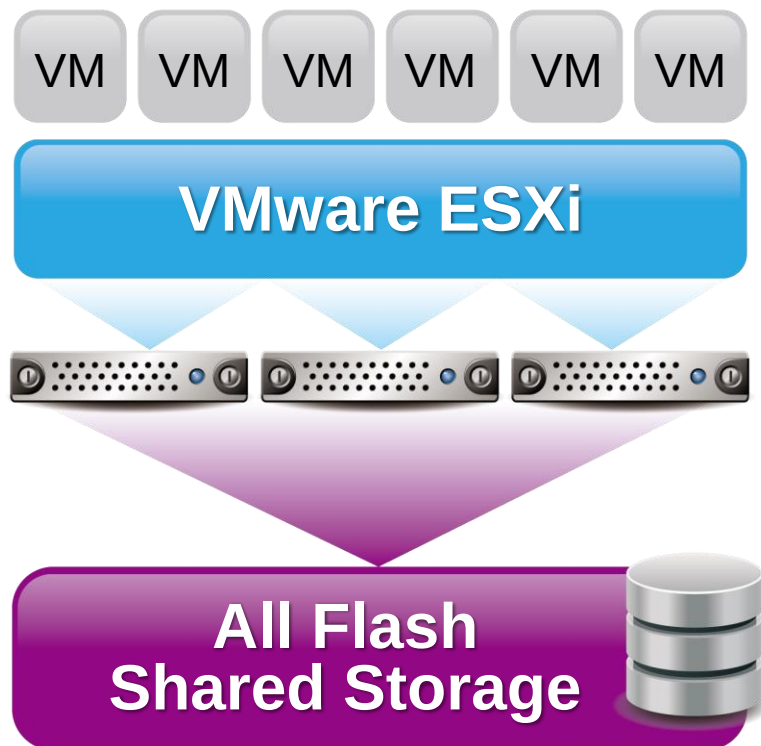
Sharing All Flash array for VMware



Old Model :
Dedicated Storage Per Workload



Virtual Model:
Shared Storage Across Workloads

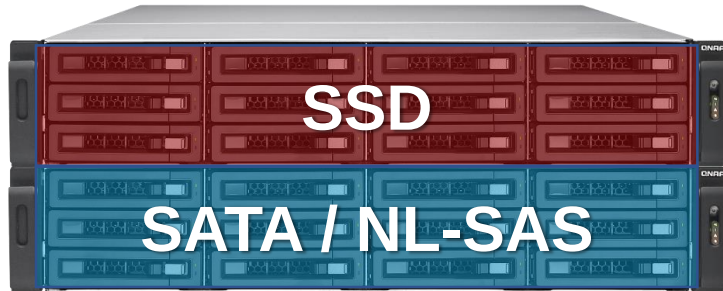


- Virtualize 100% of applications
- Run a fully-shared infrastructure
- Virtualization speed bumps
- Storage contributes to the space and power savings

Well configuration in your storage



Full of SATA or NL-SAS HDD
With high capacity but limited I/O performance.



Hybrid SSD and HDD
Combine SSD and HDD drives advantage for capacity and performance.



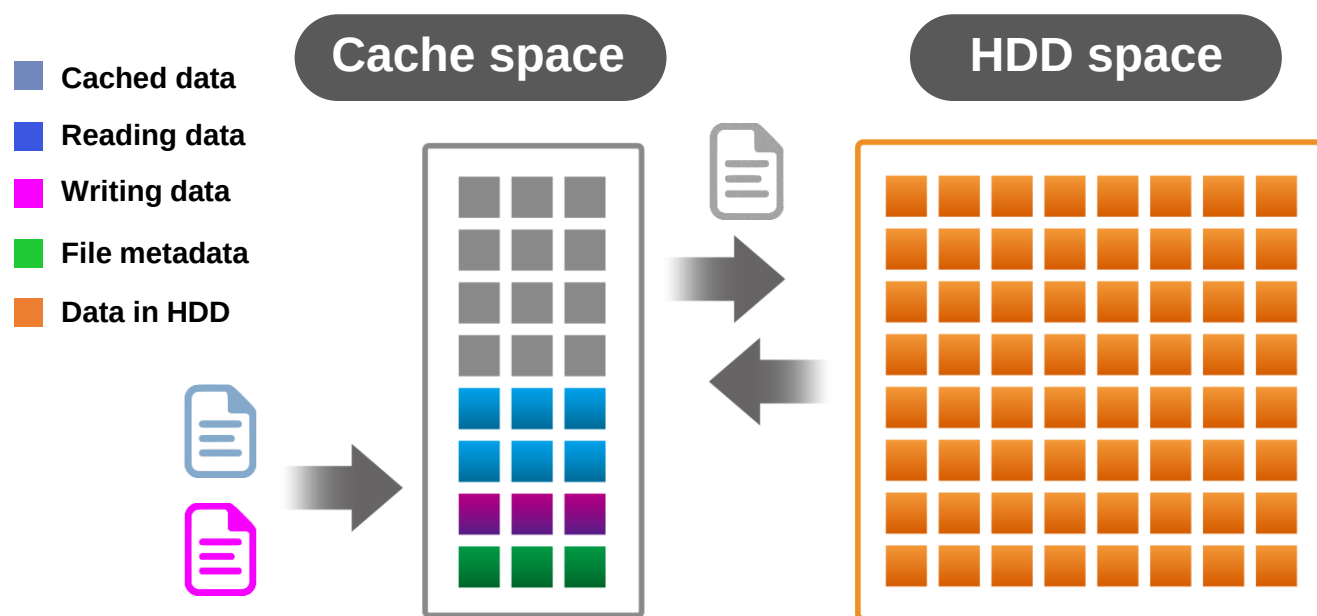
Full of SSD
Maximum I/O for extremely performance scenario.

SSD, produce the best performance results

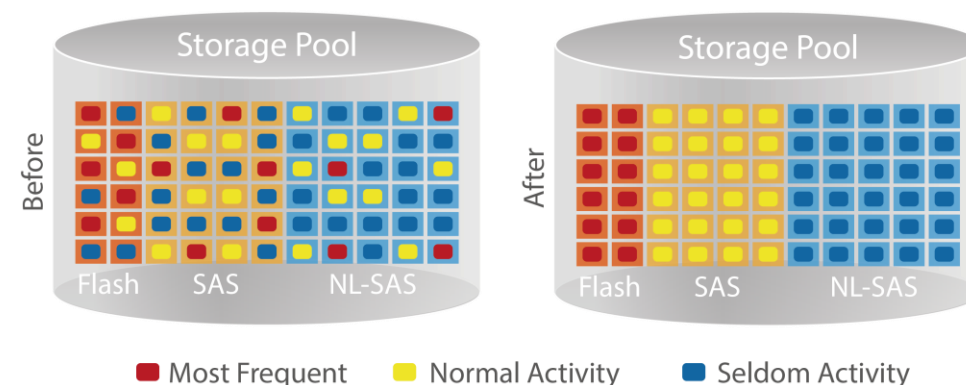


How to fully utilize SSD ?

Cache (QTS / QES)



Qtier (QTS)

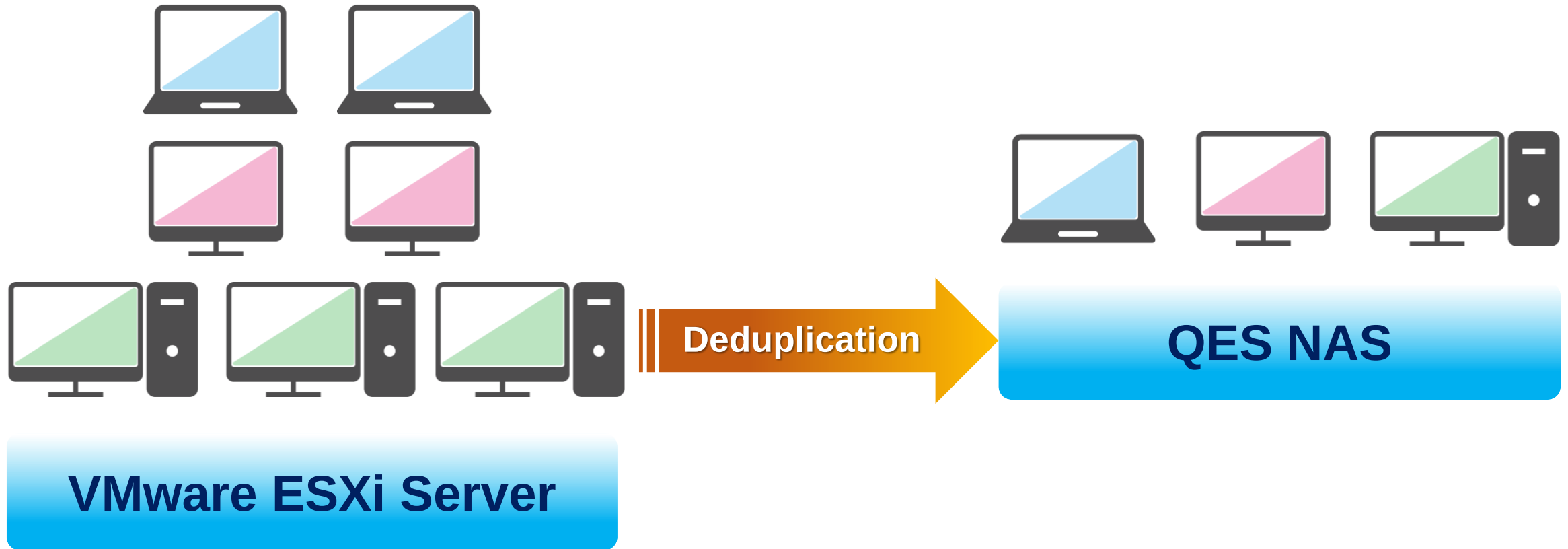


Not only performance, but more efficiency

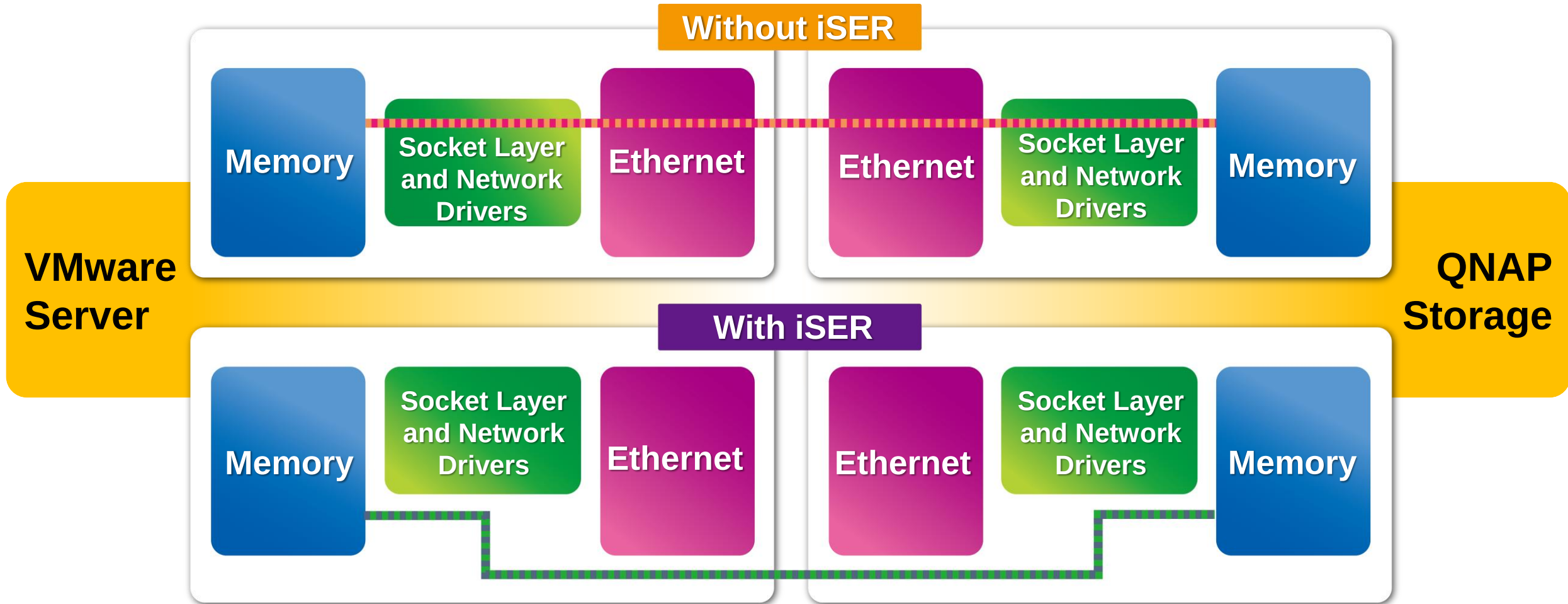
QES Deduplication makes the storage space efficient



Deduplication can save up to 95% space in the environment of 500 VDI deployment.



Boosting network Stack, RDMA (QTS/QES)



VMware Certified QNAP Storage



More on compatibility information please refer to QNAP web-site or VMware HCL list as follow:

- VMware Hardware Compatibility (HCL)

NAS Series	VMware Ready 6.7				SRM 6.5	FW version
	iSCSI	NFS	VAAI iSCSI	VAAI NFS		
ES1640dc Series	yes	yes	yes	yes	yes	QES 2.1.0 VAAI 3.0-2 SRA 5.5.248
TES-x85 Series	yes	yes	yes	yes	yes	QES 2.1.0 VAAI 3.0-2
TS-x32XU	yes	yes	yes	N/A	N/A	QTS 4.3.5
TS-x77XU	yes	yes	yes	N/A	N/A	QTS 4.3.5
TS-x83XU	yes	yes	yes	N/A	N/A	QTS 4.3.5
TS-x72XU	yes	yes	yes	N/A	N/A	QTS 4.4.0

VMware Certified QNAP Storage



Ready to certify

NAS Series	VMware Ready 6.7				SRM 6.5	FW version
	iSCSI	NFS	VAAI iSCSI	VAAI NFS		
TDS-16489U R2 QES	Complied by 2019/03	Complied by 2019/03	Complied by 2019/03	Complied by 2019/03	Complied by 2019/03	QES 2.0.0 VAAI 3.0-2 SRA 5.5.248
TDS-16489U R2 QTS	Complied by 2019/04	Complied by 2019/04	Complied by 2019/04	N/A	N/A	QTS 4.3.5
TS-2888X	Complied by 2019/05	Complied by 2019/05	Complied by 2019/05	N/A	N/A	QTS 4.3.5
ES-1648dc	Complied by 2019/06	Complied by 2019/06	Complied by 2019/06	Complied by 2019/06	Complied by 2019/06	QES 2.2.0 VAAI 3.0-2 SRA 5.5.248

QNAP NAS makes VMware safe and easy



01

HIGH AVAILABILITY

Hardware and software technologies enable IT systems durable and likely to operate continuously without failure for a long time.

02

CONSISTENT PERFORMANCE

Software design to scale the service and access the data by multiple machines without impacting production SLA.

03

DISASTER RECOVERY

The process related to preparing for recovery or continuation of IT infrastructure after a natural or man-made disaster.

QNAP

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QNAP NAS

Your Best Choice!



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